Chemical Analysis Report

TLH-ROC-2018-03-28-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **kit A w/ bacteria**
Request ID: **RQ-2018-01-29-48**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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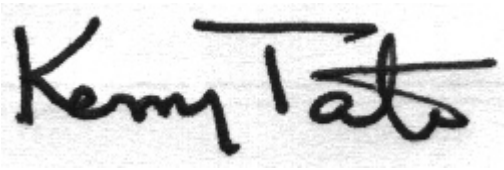
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 20-APR-2018 09:26



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value and/or the analysis did not meet established quality control criteria.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: JUMPING GULLEY CREEK **Collection Date/Time: 03/28/2018 10:45**

Field ID: G1TLHR0033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978779	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P342360	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P342509	
		Sulfate	2.1		mg SO4/L	P342513	
	SM 2120 B	Color (true)	88		PCU	P342355	
	SM 2320 B-97	Total Alkalinity	7.4		mg CaCO3/L	P342983	
	SM 2540 C-97	TDS	62		mg/L	P342660	
	SM 2540 D-97	TSS	2	I	mg/L	P343097	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P342987	
1978783	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P342924	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P342488	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P342656	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P342724	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P342906	
1978787	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P342434	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LITTLE ALAPAHA RIVER **Collection Date/Time: 03/28/2018 11:20**

Field ID: G1TLHR0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978780	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P342360	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P342509	
		Sulfate	0.88		mg SO4/L	P342513	
	SM 2120 B	Color (true)	440		PCU	P342355	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P342983	
	SM 2540 C-97	TDS	165		mg/L	P342661	
	SM 2540 D-97	TSS	2	U	mg/L	P343098	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P342987	
1978784	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P342924	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P342492	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342656	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P342724	
	SM 5310 B-00	Organic Carbon	53		mg C/L	P342906	
1978788	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P342434	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: SUGARCREEK@SUWANNEERIVER **Collection Date/Time: 03/28/2018 11:55**

Field ID: G1TLHR0047 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978781	EPA 180.1 Rev. 2.0	Turbidity	6.3		NTU	P342360	

Field ID: G1TLHR0047 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978781	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P342509	
		Sulfate	8.1		mg SO4/L	P342513	
	SM 2120 B	Color (true)	100		PCU	P342355	
	SM 2320 B-97	Total Alkalinity	43		mg CaCO3/L	P342983	
	SM 2540 C-97	TDS	105		mg/L	P342661	
	SM 2540 D-97	TSS	5	I	mg/L	P343098	
	SM 4500 F-C-97	Fluoride	0.45		mg F/L	P342987	
1978785	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P342924	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P342492	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.46		mg N/L	P342656	
	EPA 365.1 Rev. 2.0	Total-P	0.80		mg P/L	P342737	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P342906	
1978789	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.66		mg P/L	P342434	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: BETHELCREEK@MILLCREEKRD **Collection Date/Time: 03/28/2018 12:45**

Field ID: G1TLHR0062 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978782	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P342360	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P342509	
		Sulfate	1.5		mg SO4/L	P342513	
	SM 2120 B	Color (true)	740		PCU	P342355	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P342983	
	SM 2540 C-97	TDS	160		mg/L	P342661	
	SM 2540 D-97	TSS	3	IA	mg/L	P343098	
	SM 4500 F-C-97	Fluoride	0.058	I	mg F/L	P342987	
1978786	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P342924	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P342492	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P342657	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P342737	
	SM 5310 B-00	Organic Carbon	57		mg C/L	P342906	
1978790	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P342434	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342360

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342509

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342513

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342924

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342488

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342492

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342656

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342657

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342724

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342737

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342434

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P342355

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P342983

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P342660

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P342661

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343097

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343098

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342987

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342906

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342509

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342513

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342924

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	92.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	102		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342492

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342657

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342724

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342434

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	100		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P342983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P342987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342906

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342509

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978313	Chloride	101	99.4	P/P	90 - 110
1978779	Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342513

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978313	Sulfate	102	99.3	P/P	90 - 110
1978779	Sulfate	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342924

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978783	Ammonia-N	97.6	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978783	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978785	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978663	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342657

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978786	NO2NO3-N	93.4	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978904	Total-P	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978664	O-Phosphate-P	97.7	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978937	Fluoride	95.9	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978807	Organic Carbon	100	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978276	Turbidity	0.699	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342509

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978313	Chloride	1.75	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978313	Sulfate	2.74	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978783	Ammonia-N	1.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978783	Kjeldahl Nitrogen	1.06	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978785	Kjeldahl Nitrogen	0.0458	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978663	NO2NO3-N	0.494	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978786	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342724

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978678	Total-P	1.48	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978904	Total-P	1.67	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978664	O-Phosphate-P	0.590	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978571	Color (true)	13.5	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P342983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978937	Total Alkalinity	0.278	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P342660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978505	TDS	3.64	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P342661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978282	TDS	2.60	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P342987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978937	Fluoride	2.42	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978807	Organic Carbon	1.98	Spike	P	0 - 20

Quality Assurance Report
Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A82892
Included Lab Sample IDs: 1978779, 1978780, 1978781, 1978782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	99.6	P/P	90 - 110
Chloride	99.6	102	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	99.8	100	P/P	90 - 110
Sulfate	99.9	99.8	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A82910
Included Lab Sample IDs: 1978779, 1978780, 1978781, 1978782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115
Color (true)	102	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82911
Included Lab Sample IDs: 1978779, 1978780, 1978781, 1978782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82939
Included Lab Sample IDs: 1978787, 1978788, 1978789, 1978790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82998
Included Lab Sample IDs: 1978783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83005
Included Lab Sample IDs: 1978784, 1978785, 1978786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83012
Included Lab Sample IDs: 1978783, 1978784, 1978785, 1978786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83049
Included Lab Sample IDs: 1978783, 1978784, 1978785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	101	P/P	90 - 110
Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83055
Included Lab Sample IDs: 1978786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83079
Included Lab Sample IDs: 1978783, 1978784, 1978785, 1978786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	97.2	P/P	90 - 110
Organic Carbon	98.0	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83082
Included Lab Sample IDs: 1978783, 1978784, 1978785, 1978786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	98.3	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A83098
Included Lab Sample IDs: 1978779, 1978780, 1978781, 1978782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83098
Included Lab Sample IDs: 1978779, 1978780, 1978781, 1978782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.1	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						0.699	
EPA 300.0 Rev. 2.1	Chloride	98.5	101	99.4	97.7			1.75
	Sulfate	101	102	99.3	99.0			2.74
EPA 350.1 Rev. 2.0	Ammonia-N	92.6	97.6	100				1.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	102	101				1.06
	Kjeldahl Nitrogen	99.7	104	104				0.0458
EPA 353.2 Rev. 2.0	NO2NO3-N	104	101	102				0.494
	NO2NO3-N	104	93.4	94.9				1.45
EPA 365.1 Rev. 2.0	Total-P	100						1.48
	Total-P	106	101	103				1.67
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.7	98.4				0.590
SM 2120 B	Color (true)						13.5	
SM 2320 B-97	Total Alkalinity	99.3					0.278	
SM 2540 C-97	TDS						3.64	
	TDS						2.60	
SM 4500 F-C-97	Fluoride	94.7	95.9	99.1				2.42
SM 5310 B-00	Organic Carbon	97.6	100	102				1.98

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1978779, 1978780, 1978781, 1978782
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1978779, 1978780, 1978781, 1978782
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1978779, 1978780, 1978781, 1978782
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1978783, 1978784, 1978785, 1978786
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1978783, 1978784, 1978785, 1978786
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1978783, 1978784, 1978785, 1978786
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1978783, 1978784, 1978785, 1978786
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1978787, 1978788, 1978789, 1978790
SM 2120 B / E31780	True Color measured at 450 nm	1978779, 1978780, 1978781, 1978782
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1978779, 1978780, 1978781, 1978782
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1978779, 1978780, 1978781, 1978782
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1978779, 1978780, 1978781, 1978782
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1978779, 1978780, 1978781, 1978782
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1978783, 1978784, 1978785, 1978786

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/28/2018			03/28/2018 15:43	DeAsia Armster	1978779, 1978780, 1978781, 1978782
EPA 300.0 Rev. 2.1	03/28/2018			03/30/2018 07:12	Lipi Saha	1978779
	03/28/2018			03/30/2018 10:35	Lipi Saha	1978780
	03/28/2018			03/30/2018 10:47	Lipi Saha	1978781
	03/28/2018			03/30/2018 11:35	Lipi Saha	1978782
EPA 350.1 Rev. 2.0	03/28/2018			04/05/2018 10:41	Ping Hua	1978783
	03/28/2018			04/05/2018 10:47	Ping Hua	1978784
	03/28/2018			04/05/2018 10:48	Ping Hua	1978785
	03/28/2018			04/05/2018 10:50	Ping Hua	1978786
EPA 351.2 Rev. 2.0	03/28/2018	03/30/2018 08:12	Adrian Shelby	04/03/2018 12:03	Joseph Suarez	1978784
	03/28/2018	03/30/2018 08:12	Adrian Shelby	04/03/2018 12:05	Joseph Suarez	1978785
	03/28/2018	03/30/2018 08:12	Adrian Shelby	04/03/2018 12:10	Joseph Suarez	1978786
	03/28/2018	03/30/2018 10:00	Adrian Shelby	04/03/2018 09:24	Joseph Suarez	1978783
EPA 353.2 Rev. 2.0	03/28/2018			04/03/2018 13:41	Lauren Bottorf	1978783
	03/28/2018			04/03/2018 13:42	Lauren Bottorf	1978784
	03/28/2018			04/03/2018 13:44	Lauren Bottorf	1978785
	03/28/2018			04/03/2018 13:51	Lauren Bottorf	1978786
EPA 365.1 Rev. 2.0	03/28/2018	04/04/2018 12:52	Sima Feizi	04/05/2018 09:01	Beverly Y. Sanders	1978783
	03/28/2018	04/04/2018 12:52	Sima Feizi	04/05/2018 09:02	Beverly Y. Sanders	1978784
	03/28/2018	04/04/2018 12:52	Sima Feizi	04/05/2018 10:28	Beverly Y. Sanders	1978785
	03/28/2018	04/04/2018 12:52	Sima Feizi	04/05/2018 12:22	Beverly Y. Sanders	1978786
EPA 365.1 Rev. 2.0 dissolved	03/28/2018			03/28/2018 16:28	Megan Treadwell	1978787
	03/28/2018			03/28/2018 16:36	Megan Treadwell	1978788
	03/28/2018			03/28/2018 16:37	Megan Treadwell	1978789, 1978790
SM 2120 B	03/28/2018			03/28/2018 15:43	Tanya Welborn	1978779
	03/28/2018			03/28/2018 15:45	Tanya Welborn	1978781
	03/28/2018			03/28/2018 15:52	Tanya Welborn	1978780
	03/28/2018			03/28/2018 15:53	Tanya Welborn	1978782
SM 2320 B-97	03/28/2018			04/06/2018 00:34	Dale L. Simmons	1978779
	03/28/2018			04/06/2018 00:44	Dale L. Simmons	1978780
	03/28/2018			04/06/2018 00:54	Dale L. Simmons	1978781
	03/28/2018			04/06/2018 01:05	Dale L. Simmons	1978782
SM 2540 C-97	03/28/2018			03/30/2018 16:30	Yijie Li	1978779, 1978780, 1978781, 1978782
SM 2540 D-97	03/28/2018			03/30/2018 16:30	Yijie Li	1978779, 1978780, 1978781, 1978782
SM 4500 F-C-97	03/28/2018			04/06/2018 00:34	Dale L. Simmons	1978779
	03/28/2018			04/06/2018 00:44	Dale L. Simmons	1978780
	03/28/2018			04/06/2018 00:54	Dale L. Simmons	1978781
	03/28/2018			04/06/2018 01:05	Dale L. Simmons	1978782
SM 5310 B-00	03/28/2018			04/05/2018 17:02	Julia Storbeck	1978785
	03/28/2018			04/05/2018 21:29	Julia Storbeck	1978783

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	03/28/2018			04/05/2018 21:44	Julia Storbeck	1978784
	03/28/2018			04/05/2018 21:56	Julia Storbeck	1978786